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Original Research

Integrated Private Healthcare Program to Improve the Management of Non-Communicable Diseases (iMANAGE)

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Abstract

Background: The Integrated Management of non-communicable diseases (NCD) in Non-Government Establishments (iMANAGE), a Malaysian-specific program was developed with a structured framework to deliver multi-platform, cross-functional education to health care workers (HCW). This study assessed the success of iMANAGE program in improving and sustaining HCW knowledge and confidence in evidence-based practice.

Methods: Pharmacists, general practitioners (GPs) in Malaysia were recruited between September 2019 and October 2020. The recruited participants were trained on topics including pain management, mental health, and cardiovascular health, by a combination of face-to-face workshops and live webinars. Participants were assessed for improvement in their skills and confidence through evaluation of mean evidence-based practice confidence (EPIC) total score, mean EPIC confidence score and general self-efficacy scale (GSE) score at baseline (pre- and post-workshop), 6-months, and 12-months.

Results: In this study, 195 pharmacists and 211 general practitioners (GPs) in Malaysia were recruited. Overall, pharmacist and GP confidence and self-efficacy significantly improved following the delivery of the educational activity ($p<0.000$). At the peak of the coronavirus disease 2019 (COVID-19) pandemic, confidence in delivering evidence-based patient care decreased while self-efficacy remained stable. At the end of 12-month follow-up confidence recovered and self-efficacy continued to improve over time.

Conclusions: Effective screening, risk mitigation and ongoing management carried out by frontline health care workers is key to optimal health outcomes. Evaluated at the peak of COVID-19 pandemic, our study demonstrated the effectiveness and resilience of a multidisciplinary, integrated, medical education program improved both skills and confidence in NCD management.

ABBREVIATIONS

COVID-19: Coronavirus Disease 2019; CME: Continuing Medical Education; EPIC evidence-based practice confidence; GP: general practitioners; GSE: general self-efficacy scale; iMANAGE: Integrated Management of non-communicable diseases (NCD) in Non-Government Establishments; NCD: Non-Communicable Diseases; rANOVA: Repeated measures of Variance

INTRODUCTION

One of the key factors for a successful and collaborative care of patients is to have well-qualified pharmacists and (GPs) who are confident in following evidence-based professional protocols to ensure care provided are informed by results of screening assessments and tests. The International Pharmaceutical Federation indicates that in addition to GPs, pharmacists are primary healthcare providers, who are accessible and play an important role in the management of chronic conditions [1]. Studies highlight that pharmacists are a frequent and trusted healthcare providers [2]. General practice and community pharmacy together have important roles in providing integrated care for patients with chronic conditions [1-3].

To be competent, healthcare providers need to be both knowledgeable and confident in their ability to perform clinical tasks [4].

Clinical knowledge and confidence as important determinants of clinical outcomes

Evidence-based training has been shown to be effective in

influencing the knowledge, skills and attitudes of healthcare professionals [5]. In addition to the access to the latest evidence-based medicine, confidence (also known as self-efficacy) plays an equally important role. Self-efficacy is a person's belief in their ability to succeed in a specific situation or task. It has less to do with the specific skills and more to do with what the person can do with the skills they have gained. In the healthcare sector, self-efficacy has been linked to provider behaviours, such as more likely to adequately prescribe treatments [6]. Conversely, insufficient self-efficacy has been identified as a barrier for the delivery of healthcare, including patient counselling and treatment [7,8]. There are multiple mechanisms that influences the self-efficacy. This includes being told that an action is possible, visualisation of exercises, observing others doing it or performing the action oneself [7]. Programs which improved the confidence (self-efficacy) in the evidence-based practice amongst physical therapists have demonstrated longevity in behaviour change [9]. Most of the research on self-efficacy in the evidence-based practice has evaluated bespoke programs designed for discreet audiences. Currently, very little is known about the success of evidence-based training programs designed for multidisciplinary audiences in Malaysia and within those, a breadth of demographic variety, including early and later-career professionals.

Unmet clinical need: multidisciplinary care of non-communicable diseases

Non-communicable diseases (NCDs) is an umbrella term used to describe cardiovascular diseases, type 2 diabetes mellitus, cancer, chronic respiratory diseases and mental health conditions that are by their nature, non-communicable [1]. In addition to these five NCDs, pain is another condition, which can manifest as both a consequence and a driver of morbidity itself [10]. The incidence of NCDs is growing creating huge impact on the individuals and societies. The World Health Organization estimates that one in five people have at least one NCD, and are one of the main causes of morbidity in more than 36 million people every year [11]. In low and middle-income countries, the burden of NCDs is growing fast, and is expected to worsen with larger the ageing population [1, 12]. However, studies suggest that with appropriate risk factor identification, around 80% of premature heart diseases and stroke, 80% of type 2 diabetes mellitus and 40% of cancers are preventable [13].

Many of the NCDs share common and preventable risk factors [10]. Some are modifiable, such as habits or use of tobacco, drugs, or alcohol , diet and more physical activity [1]. When they do manifest, the management of most NCDs also have evidence-based guidance that can be followed [14]. While guidelines exist, disease control is more often sub-optimal. Reviews have highlighted the challenges in patient screening and sub-optimal management of disease parameters, which includes not treating to target, patient compliance or non-adherence to therapy, diet and lifestyle recommendations. Partly, this may be due to the fact that many healthcare systems are not structured to address the prevention and management of NCDs. There are limitations in the models for NCD management, which fail to address the totality of the impact either on the individual or the society, especially with respect to the impact of NCDs on musculoskeletal health and pain. An integrated and sustainable approach is warranted, not only to reduce the incidence and impact of the five key NCDs, but also to improve the management of healthy and ageing population [10].

Study aim

To assess the success in improving and sustaining healthcare professional knowledge and confidence in evidence-based practice, an integrated, multidisciplinary educational program was developed for pharmacist and GP led management of patients with NCDs.

METHODS

Study design

The Integrated Management of NCD in Non-Government Establishments (iMANAGE) program was evaluated in 115 pharmacists and 90 GPs in Malaysia between September 2019 and October 2020. The program consisted of three topics — pain management, mental health, and cardiovascular health. Pharmacists received pre-reads and assessments followed by an 8-hour face-to-face interactive case study workshop and a 1-hour online webinar. GPs attended the face-to-face interactive case study workshop and a 1-hour online webinar. This was followed up with nine continuing medical education (CME) sessions, virtually, due to COVID-19 pandemic in 2020. Participants were also able to access the recordings of the trainings. In addition to the training resources, participants were also able to access an online directory of participating specialists, GPs and pharmacists to consult on cases and refer patients. Participants were surveyed at baseline prior to the workshop (pre-program), at the conclusion of the last activity (post workshop) and 6- and 12-months post-activities. Ethical approval for the project was provided by the Bond University Research Ethics Committee (Queensland, Australia). Repeated measures of Variance (rANOVA) were used to determine changes between group means and across outcome measures, using $p<0.05$ as a minimum threshold for significance. Post hoc tests were conducted for pairwise comparisons to determine what the differences were between group means.

Assessments

Demographic details of the participants were collected during the registration, which included information regarding the duration of their profession or practice and the level of education, to measure the variation in the multidisciplinary population. Social validity data, including Likert satisfaction scales (from 1 to 7) and qualitative open-ended questions about program improvement were collected at the end of each of the face-to-face workshops. At each assessment time point, self-efficacy was measured using the General Self-Efficacy Scale (GSE). The GSE is a 10-item psychometric scale that helps to assess a person's belief in their ability to perform a task successfully. Each item refers to successful coping and implies an internal-stable attribution of success. Perceived self-efficacy is an operative construct, which is related to subsequent behaviour, and therefore, is relevant

for clinical practice and behaviour change. The total score is calculated by finding the sum of all the items. For the GSE, the total score ranges between 10 and 40, with a higher score indicating more self-efficacy.

Apart from self-efficacy, confidence may also play a role in healthcare provision. In this study, the Evidence-based Practice Confidence (EPIC) Scale was used to report individual rates of confidence. This scale assesses the confidence to perform each step on a scale of 0% (no confidence) to 100% (completely confident). The EPIC scale is a 9-item validated questionnaire used to evaluate healthcare professionals' beliefs in their ability to implement evidence-based practice and the effects of interventions on these beliefs [15]. Items in the EPIC scale pertain to confidence in their abilities, including confidence to identify a gap in one's knowledge, formulating a clinical question, conducting a literature search, critically appraising the evidence, interpreting statistical tests, determining the relevance of the evidence, asking patients about their needs, values and treatment preferences. The EPIC scale has excellent test-retest reliability and internal consistency. The estimated minimum detectable change at the 90% confidence level (MDC_{90}) of the EPIC scale is 5.1%, which indicates that the change in confidence is 'true' and not due to measurement error. Responses were averaged to generate a mean confidence score.

RESULTS

A total of 115 pharmacists and 90 (GPs) signed up for the iMANAGE program and participated in at least one of the three modules offered. Throughout 2020, nine virtual CME sessions were conducted, which were attended by 614 participants. Demographic details of the participants are shown in Table 1.

Apart from a mix of pharmacists and GPs as participants, the gender split, age of participants and years in practice also varied. The average age of participants was 41 ± 14 years. In the pharmacist group, majority of the participants were females, while in the GP group, majority of the participants were males. The average years of professional practice was 14.5 ± 12.3 years Table 1.

Table 1: Participant demographic information

PARAMETER	PARTICIPANTS
Number of registrations Pre workshop Post workshop 6 months 12 months	 210 245 155 118
Profession, n (%) Pharmacist General Practitioner Missing	 125 (59.8) 84 (40.2) 28 (11.8)
Participants based on gender Females, n (%) | Males, n (%) Pharmacist General Practitioner	 138 (58.2) | 71 (30.0) 100 (83.3) | 25 (20.0) 38 (45.2) | 46 (54.8)
Years in practice, mean (SD)	14.5 (12.3)
Working hours per week, mean (SD)	41.6 (15.6)
Age, mean (SD)	41 (14)

Abbreviations: SD: standard deviation.

Utility of the knowledge and skills to clinical practice

Following the survey and educational activities, participants were asked to rate the application and utility of the therapeutic information and skills learnt, in their day-to-day practice. Overall, 100% of participants in the pain workshop, 99.0% of participants in the cardiac health workshop and 98.1% of participants in the mental health workshop rated the information and skills they learnt on a scale of 1 (very useful), 2 (quite useful) and 3 (fairly useful).

Self-assessed confidence in evidence-based practice for NCD management

Confidence in practicing the knowledge and skills learnt in the program was assessed using the EPIC Scale score. Assessment was performed before the program, after the program and then at 6- and 12-months after the conclusion of the program. The EPIC Confidence scores at each time point are shown in Table 2.

Prior to the educational program, the mean practice confidence overall was 78.4% ± 14.7%, which improved to 88.7% immediately after the conclusion of the program Table 2. At 6-months follow-up, the EPIC confidence score decreased to 62% overall while at the end of 12-months, the confidence score increased to 79.7%. The difference between the means was statistically significant, (F [3,228] = 83.681, p=0.000). The *post hoc* analysis showed a significant improvement in the confidence scores, immediately after the conclusion of the program compared with pre-program (p=0.000). The reduction in the confidence scores at 6-months follow-up was significantly lower compared with pre-program scores (p=0.000). However, the confidence scores improved at the end of 12-months follow-up (p<0.000).

The subgroup analysis showed that there were no significant differences between pharmacists and GPs at each of the timepoints (data not shown).

Self-assessed self-efficacy in evidence-based practice for NCD management

The GSE was used to measure the self-efficacy expectation of the participants at each assessment timepoint. Table 3 shows the GSE total score for the study participants.

Table 2: Mean EPIC scores for confidence

ASSESSMENT TIMEPOINTS	MEAN % (SD)
Pre-program (n=77)	**78.4% (14.7)**
Pharmacist (n=68)	76.9% (14.3)
General practitioner (n=9)	89.8% (13.3)
Post-program (n=77)	**88.7% (12.8)**
Pharmacist (n=68)	88.2% (12.7)
General practitioner (n=9)	92.4% (14.2)
6 months (n=77)	**62.0% (12.3)**
Pharmacist (n=68)	61.4% (11.5)
General practitioner (n=9)	66.1% (17.4)
12 months (n=77)	**79.7% (12.4)**
Pharmacist (n=68)	78.4% (11.2)
General practitioner (n=9)	90.0% (16.3)

Abbreviations: EPIC: evidence-based practice confidence, is a scale from 0% (no confidence) to 100%; SD: standard deviation.

Table 3: Mean GSE scores in the study participants

ASSESSMENT TIMEPOINTS	MEAN (SD)
Pre-program (n=76)	**29.76 (4.33)**
Pharmacist (n=67)	29.36 (3.95)
General practitioner (n=9)	32.78 (5.95)
Post-program (n=76)	**31.24 (4.16)**
Pharmacist (n=67)	31.16 (3.93)
General practitioner (n=9)	31.78 (5.89)
6 months (n=76)	**31.78 (2.61)**
Pharmacist (n=67)	31.78 (2.50)
General practitioner (n=9)	31.78 (3.49)
12 months (n=76)	**33.17 (3.25)**
Pharmacist (n=67)	32.76 (2.93)
General practitioner (n=9)	36.22 (3.99)

Abbreviations: GSE: general self-efficacy scale, assessed on a scale of 10–40, with 40 = high self-efficacy; SD: standard deviation.

Baseline or pre-program self-efficacy scores were 29.76 ± 14.33 and increased to 31.24 at the end of the workshop or educational program, which suggested an improvement in self-efficacy. Scores remained steady at 31.78 at the end of 6-months follow-up, and then increased to 33.17 at the end of 12-months follow-up. The mean difference between the timepoints were statistically significant (F [3,225] = 15.215, p=0.000). *Post-hoc* analysis indicated significant improvement in the mean self-efficacy score from pre-program compared with post program or immediately after the last educational activity (p=0.003) and pre-program compared with 6-months follow-up (p=0.002) or 12-months follow-up (p=0.000). There was also a significant increase in the confidence between the pre-program and post program (last educational activity) the 12-months follow-up (p=0.010) or the 6-months and 12-months follow-up (p=0.015). Unlike for confidence, there was a significant difference in the self-efficacy between the pharmacist and GP subgroups overall, with GPs reporting significantly higher self-efficacy (p=0.029).

DISCUSSION

The effectiveness of an integrated primary healthcare professional medical education program was assessed over a period of time for its ability to improve the skills and confidence of practitioners managing patients with NCDs or those at risk of developing NCDs.

Previous studies have attempted to quantify behaviour change following the medical education programs. In 2009, a Cochrane review of 32 studies, judged to be of moderate or high quality, found moderate to moderately large effects in programs with interactive workshops or combined workshops and didactic presentations. In most of the studies, the didactic presentations alone did not show any significant effects [16]. However, the duration for which these effects were maintained are not reported. Evaluation of another multi-component educational program on adolescent health aimed at GPs found an improvement in knowledge, skill and self-perceived competency at 7 months, which sustained or further improved at 12-months follow-up [17]. The findings of our study are in line with this study, wherein, follow-up for longer period was able to detect a meaningful improvement in confidence despite unforeseen environmental challenges that occurred during the delivery and evaluation of the program.

In this study, we evaluated the healthcare professional skills and confidence at pre-program, post program (immediately after the educational activities), at 6- and 12-months follow-up. The program was designed for a multidisciplinary audience, with face-to-face module workshops. However, due to the COVID-19 pandemic the face-to-face workshops were rescheduled and adapted for online delivery instead. The remainder of the program was conducted according to the initial design.

Using two validated scales, pharmacist and GP confidence and self-assessment of the skills to be learned during the program were benchmarked. Despite a change in the delivery format, practitioner self-efficacy scores were improved compared with before the educational activities. Following the conclusion of the education program, with COVID-19 pandemic at its peak, it was not unexpected to see a decrease in confidence and self-efficacy at 6-month follow-up. With complete lockdowns and social restrictions, the impact on the delivery of healthcare and disruptions in the practitioner's ability to practice the skills they learnt were expected. However, with long-term follow-up we saw improvement in practitioner confidence and self-efficacy again. As our program continued, with a "new normal" of online meetings, expert speakers, and online resources, we observed an increase in confidence at 12-months follow-up compared with pre-workshop levels. Had the follow-up been restricted to 6-months, the impact of COVID-19 pandemic on the delivery of medical education would have been missed. Therefore, the length or duration of follow-up became an important factor for interpreting the participants' confidence in the information and skills learnt.

Constructing evidence-based medical education programs that addresses self-efficacy in multiple ways, including the theory, demonstrations or observing case management by peers and having the opportunity to practice skills by themselves may have contributed to the success and resilience of this program. While learning should ideally be tailored to the individual you are educating, this structured program demonstrated success not only in the two medical disciplines (pharmacy and general practice) but was also successful in improving the confidence and self-efficacy of individuals from diverse backgrounds within this population [18]. In our study, there were both early and later-career practitioners within different clinical population and educated on the management of three distinct therapeutic areas. The iMANAGE program could therefore offer efficiency in terms of healthcare professional training across a wide range of topics and disciplines. Furthermore, the flexibility of being able to operate the platform remotely or face-to-face could offer a resilient medical education to rely from now on.

CONCLUSIONS

This 13-month study of pharmacist and GP skills and the confidence in managing patients with or at risk of developing NCDs demonstrated the applicability to a diverse range of multi-

disciplinary medical practitioners and resilience of this integrated program in withstanding unforeseen environmental challenges. Long-term follow-up for measurement of medical education success was also benchmarked at 13 months for monitoring the effectiveness of similar programs on both skills and practitioner confidence.

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AUTHORS CONTRIBUTIONS

GG: conceptualization, methodology, investigation, validation, medical review and editing. JM: conceptualization, methodology, investigation, validation, medical review, medical writing and editing. PS: methodology, validation, data analysis, medical writing, medical review and editing. CP: data analysis, medical writing, medical review and editing

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